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WHAT THE MAYOR AND CITY COUNCIL CAN DO IN THE PREVENTION OF TYPHOID FEVER.^a

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Since the early dawn of civilization the conservation of human health has been a problem in the minds of men and has received more or less consideration from those responsible for the welfare of the tribes and nations. Public hygiene was cultivated to some extent among the ancient Egyptians, and in the code of sanitary laws given to the children of Israel by Moses there is contained much that might be adopted advantageously by many of our communities in the twentieth century.

From time to time infectious diseases have swept as great epidemics over different parts of the world. The peoples rudely and terribly awakened to the existence of these devastating scourges have groped in darkness to find ways of escape. Various and at times most fantastic hypotheses have been adopted to account for the visitations. In this dense wilderness of doubt and fear, of superstition and ignorance, there have appeared from time to time men of science who, basing their conclusions on carefully observed facts, have blazed a trail toward the light. In the nineteenth century many men of this type appeared and wonderful progress was made.

The twentieth century, bringing the accumulated knowledge of the past, presents us with wonderful opportunities. Efficient methods of preventing most of the widely prevalent infectious diseases are now perfectly clear. Shall we endeavor to apply these methods or shall we await the developments of the future in the hope that methods of easier application may be discovered? Such postponement would seem no more justifiable here than it would in other fields of endeavor for the betterment of the human race. While awaiting the discovery of better methods innumerable lives may be needlessly lost. It is, therefore, a plain duty for us to employ to the best possible advantage such instruments as we have at hand the efficiency of which has been demonstrated.

APPLICATION OF METHODS TO PREVENT INFECTIOUS DISEASES.

Although efficient methods to prevent most of the infectious diseases are now well known, yet in many instances the securing of ways and means to get these methods applied in a given community remains

^a Read at the annual convention of the Carolina Municipal Association, held at Winston Salem, N. C., June 2 and 3, 1910.

a grave and difficult problem. To the inexperienced the passage of laws requiring the enforcement of the methods would seem a simple solution of this problem. Convince the average citizen of the existence of some condition deleterious to the community and at the same time remediable, and as a rule he will say, "There ought to be a law against it." This observation in many instances is no doubt quite true, but the practical question which always arises in this connection is, Is the community ready for such a law? In other words, are the people willing to be subjected to such inconveniences and curtailment of personal liberties as may follow the enactment of such a law for the benefits which may accrue? Ruskin once somewhat cynically observed:

Any interference which tends to reform and protect the health of the masses is viewed by them as unwarranted interference with their vested rights to inevitable disease and death.

Such a view among "the masses" is certainly becoming more and more exceptional. If the people have the facts about a grossly insanitary condition properly presented to them, they will, as a rule, become convinced of the advisability of having such condition corrected, and not only tolerate, but in some instances demand interference by the sanitary authorities.

The people generally, under the various educational influences of modern times, are adopting higher and higher standards of sanitation. Conditions which were once viewed with indifference or helplessness, are now abhorred.

Under a republican form of government no law can be successfully enacted which does not represent the strong convictions of a strong majority. The people, having the power of appointment of the makers and the administrators of the law, are the ultimate arbiters of the form of government under which they shall live. Education of the people, taken in a broad sense is, therefore, essential to advancement in sanitation, or disease prevention, as in other measures for the uplift of our nation.

The adage "Nothing succeeds like success," is particularly applicable to the work of disease prevention. In these days of publicity a successful fight against a disease in any particular community will be heralded abroad, and may have a widespread—even a world-wide—educative influence. Among the many brilliant achievements in sanitation within recent years which have had such influence, a few may be mentioned: The eradication of yellow fever from Habana, Cuba, and New Orleans, La.; the sanitation of the Isthmian Canal Zone in Panama; the eradication of bubonic plague from San Francisco, Cal.; the marked reduction in hookworm disease in Porto Rico; and the eradication of typhoid fever from Trier, Germany.

A successful campaign against one infectious disease in a community educates to a considerable extent the people of that community to an understanding of the feasibility of successful campaigns against other infectious diseases. The proper disposal of sewage in order to eradicate hookworm disease can be expected to effect a very marked reduction in the prevalence of typhoid fever, because both hookworm disease and typhoid fever are caused by infections which are disseminated, primarily, essentially and solely from faultily disposed-of excreta from human beings. The preven-

tion of sewage-borne infections is certainly one of the most vitally important economic problems with which our Southern States are confronted to-day. There is abundant indisputable evidence that the proper disposal of human sewage will prevent typhoid fever, hook-worm disease, the dysenteries, much of the diarrheal disease of infant and adult life, and many of the diseases caused by the larger animal parasites; by preventing these and perhaps many other infections, it will probably operate to markedly reduce the prevalence of tuberculosis, pneumonia, and other diseases, possibly including pellagra.

Thus in proper sewage disposal we have a measure which is of remarkably broad application in the prevention of disease. As a simple prescription with "shot-gun" effects, it can be most highly recommended for the ills of the community.

With the facts which the accumulated knowledge of the ages lays before us, can anyone doubt the wisdom of a municipality when it spends sufficient money to secure a proper disposal of its own sewage and to prevent to a reasonable degree the spread of infection coming through various media from the sewage of other communities? Can anyone doubt the wisdom of a dweller in a rural section when he expends a few dollars or a little labor for the construction and management of a sanitary privy and thereby saves in doctors bills alone many times over the amount of his expenditure? The value of the health and happiness preserved to the people by the use of this simple sanitary device can not be measured on a monetary basis.

Typhoid fever presents itself as a striking example of the diseases due to sewage-borne infections, and therefore may be appropriately taken up for somewhat specific consideration.

PREVALENCE OF TYPHOID FEVER.

Typhoid fever has been defined as "a disease of civilization," but as Sedgwick well says:

It ought to be clearly understood that it is only a disease of defective civilization, for it has gradually become notorious that the widespread or frequent occurrence of typhoid fever in any community must be due somehow to defective sanitation, and defective sanitation means defective civilization.

There are in the United States comparatively few communities of over 1,000 persons, which, during any period of twelve consecutive months within the past decade, have been entirely free from typhoid fever. According to the Census Report for 1900, the average typhoid fever death rate in the United States was 46.5 per 100,000 inhabitants. This means that in the census year, which may be taken as an average, there were about 500 cases of and over 46 deaths from typhoid fever among every 100,000 persons composing the American nation. The total number of deaths from typhoid fever recorded that year was 35,379, which gave this disease fourth place on the mortality list.

The rate of prevalence of typhoid fever in the United States in comparison with the rates in other countries is high. Thus the annual typhoid death rate per 100,000 population for the period of 1901-1905 was in Scotland, 6.2; in Germany, 7.6; in England and Wales, 11.2; in Belgium, 16.8; in Austria (1901-1904), 19.9; in Hungary, 28.3; in Italy, 35.2; while the rate in the United States during the same period was about 46 (estimated).

Do not these figures plead eloquently that in the development and exploitation of the wonderful natural resources of our country it is high time that serious consideration be given to measures for the conservation of that most important of all our resources, the nation's health?

Some of the European countries now having relatively low typhoid rates formerly had high rates. Their climatic conditions seem to be as favorable to typhoid infection as those of the United States as a whole. Therefore it appears reasonable to conclude that their decidedly lower typhoid rates have been brought about by their better enforcement of the preventive measures.

In the United States the disease is especially prevalent in the South. According to the figures of the United States Census Report for 1900, the 10 States which had the highest typhoid death rates (average, about 79 per 100,000) are all States located south of the Potomac and east of the Mississippi rivers; the 10 States which had the lowest rates (average, about 20 per 100,000) are all Northern or Western States. Some of the Northern States formerly had high rates, as high as or higher than those which some of the worst affected Southern States have had in recent years. In Massachusetts, for example, in the decade 1871-1880, the average annual typhoid death rate was 62 per 100,000, while in the period 1901-1905 it was 18.2.

The lowered typhoid death rates in the Northern States have followed improvements in the water and milk supplies, the installation of better sewage disposal systems, and improvements in general sanitary conditions. The high rate of prevalence of typhoid fever in the South may reasonably be attributed to the following conditions:

1. Faulty sewage disposal, incident to the relatively large rural population, and, particularly, as pointed out by the investigations of Stiles,^a to the large percentage of negroes in the population.

2. Climate; the long periods of warm weather when there are additional agents for the transmission of the infection, such as flies and other insects and when greater quantities of uncooked foods and beverages are consumed and there is probably increased individual susceptibility to the infection.

It is certainly possible, and by some regarded as even probable, that whatever increased susceptibility to typhoid infection may exist in warm weather is due largely to the ingestion of organisms which are disseminated from faultily disposed of human excreta. If this hypothesis be correct it is certain that the proper disposal of sewage will completely prevent the operation of all the factors in the production of typhoid fever which are particularly favored by warm weather conditions.

Considering the number of communities in the South in which polluted water supplies have been used for long periods, it is a notable fact that there have been reported in the South no pronounced and extensive epidemics of typhoid fever caused by water-borne infection. It may be that the causative organisms in the relatively warmer river and lake waters of the South do not survive in sufficient numbers to cause pronounced epidemics. In some communities in the South, as has been shown for some in the North, water may play an important

^a Hookworm disease and the Negroes; Hampton Leaflets, September, 1909; by Ch. Wardell Stiles.

part, but judging by the limited data available, it seems probable that water is a relatively much less important factor in the spread of the infection in the South than it is in the North.

Not many years ago typhoid fever was regarded quite generally as being largely or even entirely a water-borne disease, and the purity of a community's water supply was estimated from the typhoid death rate. Careful epidemiologic studies have shown that in some communities there may be a high typhoid death rate due largely or even entirely to factors other than water in the spread of the infection, and sanitarians now regard the typhoid death rate of a community as a fair measure of the intelligence exercised by that community in respect to sanitation in general.

NATURE AND SOURCE OF THE INFECTION.

The modes of dissemination and the means for the prevention of typhoid fever are now quite well known—in fact there are few other infectious diseases about the spread of which so many convincing facts have been recorded. Notwithstanding the accumulated knowledge and its ready availability, the general public still, in too frequent instances, is found to be woefully ignorant of the nature of typhoid infection and of the fact that the disease is thoroughly preventable. In many communities the people regard the occurrence every year of a certain amount of typhoid fever as inevitable, and accept it with complacency. But if in one of those same communities a few cases of Asiatic cholera should occur, the people generally would become keenly awake to the situation and urgently demand protection. The newspapers would publish, on front pages with glaring headlines, vivid accounts of the disease; the purse strings of the public treasury would be loosened, and if the funds there were not sufficient to meet the emergency, more could readily be obtained by popular subscription. In consequence of these earnest activities Asiatic cholera would soon be eradicated. Typhoid fever is just as preventable as is Asiatic cholera, and, it so happens, is spread in exactly the same ways and can be eradicated by exactly similar measures. Both diseases are caused by germs which are parasitic in nature and dependent upon man as their permanent host for their continued existence. These germs are contained in the dejecta from the bodies of infected persons. From such dejecta they may be conveyed by various agents such as water, food, fingers, flies, etc., to the alimentary canals of healthy persons and so be continued on their disease and death-dealing course. To prevent these diseases it is evident, therefore, that all that is necessary is to disinfect the excreta from infected persons, or to dispose of these excreta in such a way that the germs contained in them can not be conveyed to other persons. This plan of action seems simple enough, and if it can be made sufficiently wide in scope, it will undoubtedly prove successful. The problem has, however, certain complications which increase the difficulties of its solution:

1. Certain persons continue to harbor the germs in their bodies and to discharge them in their excreta for weeks, months, or even years after complete recovery from clinical symptoms of the disease. Other persons contract the infection and, although never having a clinically recognizable attack of the disease, become germ carriers. In order to safeguard the community against these sources of infec-

tion it is necessary to have the sewage of all persons—the sick and the well—properly disposed of.

2. The persons in a given community may use water, milk, and various foodstuffs coming from a distance and liable to be contaminated with the excreta from infected persons over whom their own local officials have no jurisdiction; thus the problem may become of state, national, or even international extent.

But these difficulties are not insurmountable. Should the disaster of a cholera epidemic fall upon this country there is not a question of doubt that effective measures for its eradication would be promptly adopted. Since this is true for cholera, it seems evident that it is the duty of every good citizen to strive with might and main to awaken the people from their lethargy in respect to the preventability of typhoid fever.

FUNCTIONS OF THE MAYOR AND CITY COUNCIL

The functions of the governing body of the municipality are legislative, administrative, and educative. In performing one of these classes of functions it performs to some extent the others also. If laws be made wisely they can be administered successfully. The successful administration of wise laws—laws for the public welfare—will exert an educative influence upon the people, and so facilitate the subsequent enactment of laws of similar character. It is also true in these days of an awakening public that the enactment of flagrantly bad laws will have an educative effect, in some instances with disastrous consequences ensuing to the perpetrators of such laws.

The men in a municipality who are elected by the people to the mayoralty and to the city council are so elected because the majority of the people are made to believe that they will advance the best interests of the municipality. In some instances—exceptional ones now, let us hope—an organized and active minority may elect candidates to represent special interests which are opposed to the best interests of the unorganized and inactive majority. But in these days of publicity and of civic federations the opportunities of those who work for such selfish interests are becoming fewer, and the ways of the transgressor harder.

Officials who would advance the best interests of the municipality should know that one of the most important and vital of all these interests is the conservation of the health of the people. In this connection the great English minister, Disraeli, once said:

Public health is the foundation upon which rest the happiness of the people and the power of the state. Take the most beautiful kingdom, give it intelligent and laborious citizens, prosperous manufactures, productive agriculture; let arts flourish, let architects cover the land with temples and palaces; in order to defend all these riches, have first-rate weapons, fleets of torpedo boats—if the population remains stationary, if it decreases yearly in vigor and in stature, the nation must perish. And that is why I consider that the first duty of a statesman is the care of public health.

Of the widely prevalent infectious diseases none promises better results from equivalent amounts of intelligent effort at prevention than does typhoid fever, and in the prevention of this disease, therefore, municipal officers have a great opportunity.

WHAT THE MAYOR AND CITY COUNCIL CAN DO IN THE PREVENTION OF TYPHOID FEVER.

(1) *Become informed as to the nature of the infection, its modes of spread, and the methods to prevent it.*—This information is now readily available. It may be obtained by applying to the local health office, the state board of health, or to the United States Public Health Service at Washington. Anyone possessed of moderate intelligence can learn this simple lesson in hygiene, and it is the plain duty of every good citizen, particularly of those composing the governing body of the municipality, to at least try to learn it.

(2) *Make disease prevention a conspicuous policy of the administration.*—Such a policy is undoubtedly a most praiseworthy one, and if adopted with common sense and propriety can be made a most popular one. A candidate for reelection to the mayoralty or city council can point unhesitatingly to his achievements in protecting the health of the people as one excellent reason for his continuance in office. It has been remarked that "practical politicians in a municipality usually regard the health office, not as a political asset which may be used to advantage in campaigns, but as a grave liability with a great capacity for getting the administration into trouble." This estimate is not necessarily correct, and within recent years it has been realized in a number of instances that the good record of the city health office may be used as one of the winning cards in local campaigns.

(3) *Make efficiency the primary basis of appointments to positions in the health office.*—It is the health officer's success in disease prevention and not his particular political affiliations which will reflect credit upon the administration. His work is of a highly specialized character requiring of him, for its successful accomplishment, special technical training. The intelligent individual citizen, when ill, engages as his physician one whom he believes to be skilled in his profession, and in his selection gives little or no consideration to the political affiliations of the physician. The municipality should exercise similar intelligence in selecting its physician—the health officer. The administration in retaining in office an efficient city health officer who has been appointed by a previous administration deserves, and usually will get, the approbation of the people. The administration in dismissing from office such an incumbent and appointing in his place a decidedly less efficient man deserves, and should get, the grave censure of the people.

(4) *Provide adequate salaries for health officers.*—The salaries paid health officials, particularly of cities having less than 100,000 population, are, as a rule, ridiculously small. In consequence, active and efficient services can not be expected. The man of ability who holds the position of health officer usually can not afford to give up his other and more lucrative work in order to devote his time exclusively to the duties of the health office. The salary should be made commensurate with the duties and responsibilities of the position, and the municipality should then demand that the duties of the position be energetically performed.

(5) *Appropriate funds for sanitary improvements as liberally as the taxation rate will permit.*—In the average municipality there are so many public improvements needed which the funds of the treasury

are inadequate to provide that it is, no doubt, very difficult at times for the municipal authorities to determine to what purpose the scanty funds can best be put. Of the conditions affecting the welfare of the whole people of a community, a good sewerage system and a good water supply are certainly among the most vitally important. If the treasury funds are insufficient to provide these, the city authorities should keep the facts clearly and persistently before the people. By so doing, the people eventually may be made to understand and become not only willing but anxious to supply the necessary funds.

(6) *Provide for the collection of mortality and morbidity statistics so that the results of sanitary work may be known.*—This can be done with very little cost to the municipality. The enactment of an ordinance requiring physicians to report cases of infectious disease, and undertakers to file certificates of causation of death in order to obtain burial permits, will accomplish it. Without these statistics, which are the "bookkeeping of sanitary science," it is practically impossible to tell what progress is being made. In some instances the attempt may be made to conceal the facts about health conditions in a city for fear that if the conditions become known the business interests will be injured. It is just about as easy for a community to succeed in such concealment as it is for a man to conceal the fact that he has a broken leg by making efforts to run. The tactics are bad and the results usually disastrous. It certainly seems more in accordance with sound business principles for a city to know its health conditions, to improve them, and then use the improved conditions as a basis for legitimate advertising.

(7) *Provide for the proper care of the sick.*—For every case of typhoid fever originating in a municipality, the municipality is to a large extent responsible. The patient's bedside is a fountain head of infection. There the infection may readily be destroyed, but once allowed to escape from there, it may be disseminated in various ways and become very difficult, or practically impossible, to trace and destroy. Therefore, the municipality, not only on account of its ethical obligation for the development of the case, but also to safeguard the community, should provide for the necessary precautions at the bedside of the patient. If the patient's family can not be coerced into carrying out the measures, the municipality should provide either hospital accommodation or free nursing and disinfectants.

(8) *Keep in close touch with and support the health officer in his work.*—You fight a common enemy, and unless you have concerted action you can not expect to wage a successful warfare. When the mayor and city council can not agree with the health officer on the plan of campaign, it is time either for that mayor and city council or for that health officer to be removed from office.

(9) *Cooperate with the authorities of other municipalities, of the State, and of the nation.*—A municipality which dumps its untreated sewage into a stream used as a source of water supply by municipalities downstream can not consistently ask the municipalities upstream not to pollute this water with their sewage. In sanitation, municipalities, even as individuals, may adopt to practical advantage the good old golden rule "to do unto others even as you would have them do unto you."

(10) *Teach by precept and by example the precautionary measures.*—The mayor and the city councilmen have been honored with the con-

fidence of the people and have been appointed to the leadership of the municipality. Therefore their conduct, in respect to the simple rules of sanitation at least, should be exemplary. What they do quietly and consistently to safeguard their own households may impress some of their neighbors more profoundly than what they proclaim from the rostrum in the heat of political campaign. If they believe the water is polluted, they should use boiled water in their own homes. If they believe the milk supply is dangerous, they should have it pasteurized before giving it to the members of their own households. If they believe that from faultily disposed of sewage disease may be spread, they should have sanitary water-closets or privies at their own homes. In short, teach by deeds as well as words.

Such are some of the things which the mayor and city council can and should do in the prevention of typhoid fever. Summed up, just this: They can and should do their plain duty as city officials, as citizens, and as men.

And let no one suppose that this is a matter in which he has no personal interest. The duty itself we may evade, but we can never be sure of evading the penalties of its neglect. This disease not seldom attacks the rich, but it thrives most among the poor. But by reason of our common humanity we are all, whether rich or poor, more nearly related here than we are apt to think. The members of the great human family are, in fact, bound together by a thousand secret ties of whose existence the world in general little dreams; and he that was never yet connected with his poorer neighbor by deeds of charity or love may one day find, when it is too late, that he is connected with him by a bond which may bring them both, at once, to a common grave. (William Budd, Typhoid Fever, London, 1873.)